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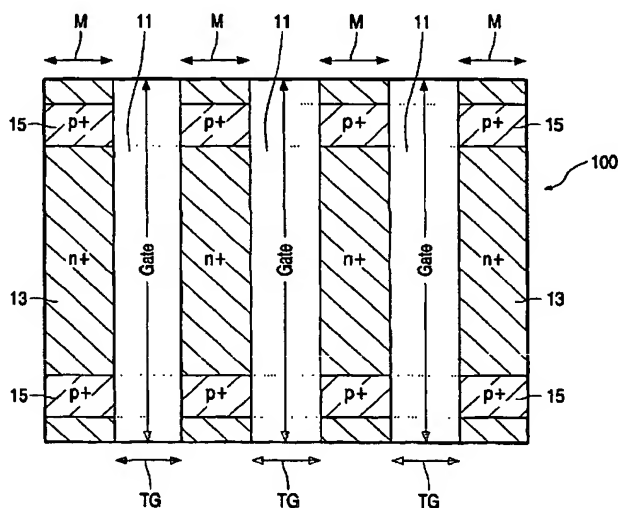
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- (75) Inventor/Applicant (for US only): PEAKE, Steven, T. [GB/GB]; Philips Intellectual Property & Standards, Cross Oak Lane, Redhill, Surrey RH1 5HA (GB).
- (54) Title: TRENCH-GATE SEMICONDUCTOR DEVICES
- (57) Abstract: A trench-gate vertical power transistor in which the trench-gates (11) are parallel stripes which extend across the active area (100). Source regions (13) and ruggedness regions (15) extend to a source contact surface as alternating stripe areas having a width perpendicular to and fully between each two adjacent parallel stripe trench-gates (11). The ruggedness regions (15) are more heavily doped than the source regions and this enables an increased length of the source regions with a consequent reduction in specific resistance of the transistor. For example, the mesa width (13,15) and the trench-gate (11) width may both be about 0.4µm, the ruggedness region (15) length may be about 1µm and the source region (13) length may be about 20µm. The doping concentration of the p type ruggedness regions (15) may be approximately 10 times greater than the doping concentration of the n type regions (13), for example about 10₂₁ cm.⁻³ and about 10₂₀ cm.⁻³ respectively.
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